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Dystocia Caused by Bilateral Muscular Hypertrophy and its Surgical Management in Murrah Buffalo

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ABSTRACT

A pluriparous Murrah buffalo with a history of dystocia and full gestation was brought to the Referral Veterinary Polyclinic ICAR-IVRI Izatnagar Bareilly. Repulsion and force traction applied to deliver the fetus were not successful in relieving dystocia. Given that the case was not fresh and that additional manipulative treatments had been performed at the field level, the decision was made to deliver the fetus via caesarean section. Muscular hypertrophy of the fetal neck and shoulder region was identified as the cause of the dystocia, which was effectively treated with a Caesarean section.

***Keywords*:** Dystocia, Bilateral Muscular hypertrophy, buffalo, Caesarean section

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INTRODUCTION

An inherited (recessive fatal) aberration known as double muscling or muscular hypertrophy is characterized by the enlargement of muscles, most notably in the proximal fore and rear parts, where intermuscular borders and grooves are plainly apparent beneath the skin (Menissier, 1982). According to Swatland and Kieffer (1974), double muscling is not related to muscle duplication, but rather to a rise in the number of muscle fibres (hyperplasia) and fibre enlargement (hypertrophy). According to Doyle et al (1990), there are 148 congenital
musculoskeletal abnormalities of the neck and thorax for every 10,000 cattle born. Large muscles, thin skin, and light bones are characteristics of muscular hypertrophy, often known as double muscling. This is a genetic disorder that frequently results in severe dystocia when it manifests in fetuses, particularly in animals that are primiparous (Roberts, 2004). Muscle mass is negatively regulated by myostatin, also known as growth and differentiation factor 8 (GDF8), and gene mutation produces this phenotype (Grobet *et al.,* 1997). Double muscling calves have longer gestation periods than regular calves, which causes their progeny to be born heavier than average (Hanset, 1991). Severe dystocia is mostly caused by significant fetal hypertrophy, especially in primiparous animals with high mortality rates. This study documents an instance of dystocia in a buffalo fetus caused by bilateral shoulder muscle hypertrophy.

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CASE HISTORY AND OBSERVATIONS

A pluriparous Murrah buffalo with a history of dystocia and full gestation was brought to the Referral Veterinary Polyclinic ICAR-IVRI Izatnagar Bareilly, UP. According to history, both water bags had burst sixteen hours prior. A nearby paravet saw the buffalo and used traction, but the fetus did not emerge. The animal's clinical observations revealed that its temperature (102.2º F) and heart rate (82 bpm) were normal. Upon per-vaginal examination, the cervix was fully dilated, the head and forelimbs were both present in the birth canal, there was little fetal fluid, and the abnormal fetus in the anterior longitudinal presentation was abnormally large, with excessive muscle development in the neck and shoulder regions. Given that the case was not fresh and that additional manipulative treatments had been performed at the field level, the decision was made to deliver the fetus via caesarean operation. Mutations to deliver the fetus were not successful in relieving dystocia. A case of dystocia caused by bilateral muscle hypertrophy was detected based on the animal history and gyneco-clinical examination. The primary barrier to progressing with vaginal delivery was the male buffalo calf's aberrant shape, which was discovered upon gross inspection. This asymmetry was caused by an overabundance of skeletal muscle in the shoulder and neck region (Fig. 1 and 2). After a smooth recovery that included regular feeding and drinking the next day, the buffalo was released from the Referral Veterinary Polyclinic with the required supportive care.

TREATMENT AND DISCUSSION

To lessen straining, 5 ml of 2% lignocaine hydrochloride was injected into the epidural space between the sacrum and the first coccygeal vertebrae before the start of the C-Section. Following childbirth, the animal received the following injections: 40 mg of dexamethasone intravenously at a dose of 0.1 mg/kg body weight; 1.125g of ceftiofur sodium plus sulbactam at a dose of 2.2 mg/kg body weight; 500 mg of flunixin meglumine intravenously at a dose of 1.1 mg/kg body weight; 20 ml of pheniramine maleate at a dose of 0.5-1.0 mg/kg body weight; Calcium-Magnesium-Boro gluconate (450 m slow IV at 1.0 ml/kg body weight); 50 I.U. IV; Metronidazole at a dose of 10 mg/kg body weight; Bolus Cleanex (4 boli intrauterine) and inj. Intalyte (2 lit. IV). All other medication was recommended for five days, except for pheniramine maleate (20 ml IM) and calcium-magnesium-borogluconate @ 450 ml slow IV. The animal made a full recovery following the care, as well as appropriate nutrition and supervision. Gross examination of the fetus showed an abnormally large male fetus because of an excess of skeletal muscle in the shoulder and neck areas (Fig. 2), which was the main cause of parturition difficulty. Similar cases of dystocia brought on by muscle hypertrophy have previously been documented in buffaloes (Kumar *et al.,* 2012; Singh *et al.,* 2017). The most distinctive characteristic of double muscling is the rounded shape of the hindquarters combined with a thicker, shorter neck (Leipold, 1983). According to Bellinge *et al.* (2005), deletion mutations in the myostatin or growth and differentiation factor 8 (GDF8) genes are likely the cause of muscular hypertrophy because they impair the regulation mechanism that controls the deposition of muscle fibres.Consequently, in the reported instance of dystocia resulting from muscular hypertrophy, a caesarean section was performed, which is more appropriate in the promptly indicated case. Recessive genes may be the origin of fat deposition limited to the musculature of certain body regions; however, the exact etiology and pathophysiology of this condition remain unknown. Excessive musculature and fat deposition beneath the epidermis and between muscle bundles were seen upon dissection of the hard swelling over the shoulder. The hindquarters and all limbs appeared to be normal. Despite its name, double muscular

Fig.1: Buffalo fetus with Bilateral muscular hypertrophy of neck and shoulder muscles delivered by Caesarean section. 2.) Dorsal view of Bilateral muscular hypertrophy due to enlargement of Trapezius, Brachiocephalicus and Omotransversarius muscle of shoulder and neck

contraction is not linked to muscle duplication; rather, it is associated with an increase in muscle fibre count (hyperplasia) and fibre enlargement (hypertrophy) (Swatland and Kieffer, 1974).

CONCLUSION

Due to bilateral muscular enlargement, the problem was identified as dystocia and was effectively treated with antibacterial medication and a caesarean operation. The Murrah buffalo made a full recovery with no further complications.

CONFLICT OF INTEREST

There are no disclosed conflicts of interest by the authors for this clinical case.

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